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For two-letter codes and other abbreviations, refer to the "Guid-
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(54) Title: METHOD OF MANUFACTURING OF A CHOLESTERIC LAYER

(57) Abstract: The invention pertains to a method of manufacturing a layer of a cholesterically ordered polymer material, in which the material is oriented in such a way that the axis of the molecular helix of the cholesterically ordered material extends transversely to the layer, wherein the method comprises the steps: a) providing a layer comprising a cholesterically ordered mixture of a low-molecular weight polymerizable material and a high-molecular weight material, which high-molecular weight material comprises a quantity of a convertible group, which in its non-converted and in its converted state determines the pitch of the material to a different extent, the conversion of said high-molecular weight material being inducible by radiation, and the layer absorbs said radiation; b) irradiating the layer to convert at least a part of the convertible groups in the irradiated parts of the layer; c) letting at least the low-molecular weight material reorient to form the required helical structure; d) at least partially polymerizing and/or cross-linking the low-molecular weight material with itself and/or with the high-molecular weight material to freeze in the formed structure.



WO 2004/040339 A1

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A. CLASSIFICATION OF SUBJECT MATTER

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Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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EPO-Internal, WPI Data, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 00 34808 A (LUB JOHAN ;KONINKL PHILIPS ELECTRONICS NV (NL); WITTE PETER VAN DE) 15 June 2000 (2000-06-15) cited in the application the whole document -----	1-7

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Further documents are listed in the continuation of box C.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0034808	A	15-06-2000	CN 1295673 T 16-05-2001
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			EP 1053493 A1 22-11-2000
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			TW 424161 B 01-03-2001
			US 2002191945 A1 19-12-2002
			US 6459847 B1 01-10-2002
